

# Chemistry, BS

The Bachelor of Science in Chemistry is designed to give students both breadth and depth in chemistry fundamentals. During their course of study, students have an opportunity to develop qualitative and quantitative problem-solving skills as well as effective communication skills. The overall objective of the program is to provide scientific background and laboratory experience for students as they prepare for chemically related careers or advanced study in fields that include both the traditional chemical specialties and other endeavors that draw upon an understanding of the chemical basis of the world around us such as biochemistry, materials science, forensic science, medicine, education, or law.

## Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

## Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

## NUPath Requirements

All undergraduate students are required to complete the NUPath Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/nupath/>).

## Chemistry Major Requirements

Code	Title	Hours
<b>Introduction to College</b>		
CHEM 1000	Chemistry/Chemical Biology at Northeastern	1
<b>Experiential Learning Introduction</b>		
EESC 2000	Professional Development for Co-op	1
<b>General Chemistry</b>		
CHEM 1161 and CHEM 1162 and CHEM 1163	General Chemistry for Science Majors and Lab for CHEM 1161 and Recitation for CHEM 1161	5
CHEM 2161 and CHEM 2162 and CHEM 2163	Concepts in Chemistry and Lab for CHEM 2161 and Recitation for CHEM 2161	5
<b>Organic Chemistry</b>		
CHEM 2315 and CHEM 2316	Organic Chemistry 1 for Chemistry Majors and Lab for CHEM 2315	6
CHEM 2317 and CHEM 2318	Organic Chemistry 2 for Chemistry Majors and Lab for CHEM 2317	6
<b>Analytical Chemistry</b>		
CHEM 2321 and CHEM 2322 and CHEM 2323	Analytical Chemistry and Lab for CHEM 2321 and Recitation for CHEM 2321	5
<b>Physical Chemistry</b>		

CHEM 3401 and CHEM 3402	Chemical Thermodynamics and Kinetics and Lab for CHEM 3401	5
CHEM 3403 and CHEM 3404	Quantum Chemistry and Spectroscopy and Lab for CHEM 3403	5
<b>Biochemistry</b>		
CHEM 4621 and CHEM 4622	and	5
<b>Advanced-Level Chemistry</b>		
Complete one of the following courses:		5
CHEM 3501 and CHEM 3502	Inorganic Chemistry and Lab for CHEM 3501	
CHEM 3505 and CHEM 3506	Introduction to Bioinorganic Chemistry and Lab for CHEM 3505	
Complete two of the following courses:		9-11
CHEM 3331 and CHEM 3332	Bioanalytical Chemistry and Lab for CHEM 3331	
CHEM 4456 and CHEM 4457	Organic Chemistry 3: Organic Chemistry of Drug Design and Development and Lab for CHEM 4456	
CHEM 4620		
CHEM 4628 and CHEM 4629	Introduction to Spectroscopy of Organic Compounds and Identification of Organic Compounds	
<b>Senior Research/Capstone</b>		
CHEM 4750	Senior Research	4

## Supporting Courses

Code	Title	Hours
<b>Mathematics</b>		
MATH 1341	Calculus 1 for Science and Engineering	4
MATH 1342	Calculus 2 for Science and Engineering	4
<b>Physics</b>		
PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151	5
PHYS 1155 and PHYS 1156 and PHYS 1157	Physics for Engineering 2 and Lab for PHYS 1155 and Interactive Learning Seminar for PHYS 1155	5

## Chemistry Major Credit Requirement

Complete 79 semester hours in the major.

## Program Requirement

135 total semester hours required

## Plan of Study

### Five Years, Three Co-ops in Summer 2/Fall

Please note that these are sample plans of study. While the requirements are the same for all students, individual schedules may vary.

## Year 1

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CHEM 1000	1 CHEM 2315	4 Open	0 Open	0
CHEM 1161	4 CHEM 2316	2		
CHEM 1162	1 MATH 1342	4		
CHEM 1163	0 PHYS 1151	3		
MATH 1341	4 PHYS 1152	1		
ENGW 1111	4 PHYS 1153	1		
Elective	4 Elective	4		
	18	19	0	0

## Year 2

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CHEM 2161	4 EESC 2000	1 Open	Co-op	0
CHEM 2162	1 CHEM 2321	4		
CHEM 2163	0 CHEM 2322	1		
CHEM 2317	4 Elective	4		
CHEM 2318	2 Elective	4		
PHYS 1155	3 Elective	4		
PHYS 1156	1			
PHYS 1157	1			
Elective	4			
	20	18	0	0

## Year 3

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	0 CHEM 3401	4	Co-op	0
	CHEM 3402	1 Elective	4	
	CHEM 3505	4 Elective	4	
	CHEM 3506	1		
	ENGW 3307	4		
	Elective	4		
	0	18	8	0

## Year 4

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	0 CHEM 3403	4 Open	0 Co-op	0
	CHEM 3404	1		
	Chemistry Elective	4		
	Elective	4		
	Elective	4		
	0	17	0	0

## Year 5

Fall	Hours Spring	Hours
Co-op	0 CHEM 4621	4
	CHEM 4622	1
	CHEM 4750	4
	Chemistry Elective	5
	Elective	4
	0	18

Total Hours: 136

## Four Years, Two Co-ops in Summer 2/Fall

## Year 1

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CHEM 1000	1 CHEM 2315	4 PHYS 1155	3 Open	
CHEM 1161	4 CHEM 2316	2 PHYS 1156	1	
CHEM 1162	1 MATH 1342	4 PHYS 1157	1	
CHEM 1163	0 PHYS 1151	3 Elective	4	
MATH 1341	4 PHYS 1152	1		
ENGW 1111	4 PHYS 1153	1		
Elective	4 Elective	4		
	18	19	9	0

## Year 2

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CHEM 2161	4 EESC 2000	1 Elective	4 Co-op	
CHEM 2162	1 CHEM 2321	4 Elective	4	
CHEM 2163	0 CHEM 2322	1		
CHEM 2317	4 CHEM 3501	4		
CHEM 2318	2 CHEM 3502	1		
Elective	4 Elective	4		
Elective	4 Elective	4		
	19	19	8	0

## Year 3

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	CHEM 3401	4 Elective	4 Co-op	
	CHEM 3402	1 Elective	4	
	Chemistry Elective	5		
	Chemistry Elective	4		
	ENGW 3307	4		
	0	18	8	0

## Year 4

Fall	Hours Spring	Hours
Co-op	CHEM 3403	4
	CHEM 3404	1
	CHEM 4621	4
	CHEM 4622	1
	CHEM 4750	4
	Elective	4
	0	18

Total Hours: 136